Cheshire West and Chester Council
Chester City Centre Air Quality Action Plan

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

March 2022

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Executive summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in Cheshire West and Chester Council (CWCC – the Council) between 2021 and 2024.

This AQAP is to be produced in response to the declaration of the Chester city centre Air Quality Management Area (AQMA) in May 2017 when widespread exceedance of the National Air Quality Objective for nitrogen dioxide annual mean were identified.

Air pollution is associated with several adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are often less affluent[1,2].

The annual health cost to the NHS of the impacts of nitrogen dioxide in England is estimated to be up to £81 million[3]. CWCC is committed to reducing the exposure of people in CWCC to poor air quality to improve health.

We have developed actions that can be considered under 5 broad topics:

- Transport – Provision of additional transport infrastructure; changes to road layout or operation; formulation of traffic plans with the aim being to encourage the use of greener modes of transport, and/or reduce congestion and associated vehicle emissions.
- Public health – Encouragement of wider behavioural changes in local population with respect to their travel choices, raise awareness and educate members of the public on the impact of air pollution.
- Planning and infrastructure – Mitigate potential air quality impacts effectively by being involved in decision making early on for future developments required to support the growth of CWCC.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Estimation of costs to the NHS and social care due to the impacts of air pollution: summary report - Public Health England 2018

- Strategies and policy guidance – Working with partners and stakeholders to direct the use of legislation and targeted enforcement to control air pollution.
- Air quality monitoring – Ensure satisfactory air quality monitoring data is available to track outcomes of the implemented AQAP measures.

It is important to note that this Action Plan is a statutory undertaking and is limited in its extent by Part IV of the Environment Act 1995 and associated statutory guidance. The objective of the AQAP is to implement measures that will ensure levels of nitrogen dioxide (NO_2) across the AQMA are consistently below the threshold of 40 micrograms per cubic metre ($\mu g/m^3$) expressed as an annual mean, as soon as is feasibly possible. This is the level currently regarded as safeguarding the most vulnerable in society against the impacts of NO_2. The objective is not to reduce ambient nitrogen dioxide levels to the lowest possible level.

Measures identified within this action plan must meet the following criteria:

1. The impact of the measure is well defined and understood and will deliver a net reduction in NO_2 emissions within the relevant timeframe; and
2. It can be delivered within the existing resource envelope, or in the event that there are related grant or third party funding opportunities, it can be considered further subject to a successful funding application.

In formulating the action plan the Council is mindful of the broader strategic work currently being undertaken around carbon reduction, sustainable transport and active travel. The need for quality data, modelling and analysis to inform complex structural decisions is vital in delivering long term goals and protecting against the risk from unintended consequences. A number of measures assessed have been identified as falling outside the scope of this Action Plan but other Council plans and strategies exist for the purpose of considering them further including the Low Emission Strategy (LES), the Local Transport Plan, the Local Cycling and Walking Infrastructure Plan (LCWIP) and the Climate Emergency Response Plan.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control and bring forward the date of compliance in the shortest timeframe possible.

Responsibilities and commitment

This AQAP was prepared by Cheshire West and Chester Council with support from the following Council service teams/departments:

- Licensing
- Transport Commissioning
- Environmental Protection
- Parking
- Strategic Transport
- Planning Policy
- Planning – Development Control
- Economic Development
- Highways
- Fleet Management
- Public Health.

This AQAP has been approved by:

Maria Byrne

Director of Environment and Communities

If you have any comments on this AQAP please send them to Environmental Protection at:

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1. Introduction

This report outlines the actions that Cheshire West and Chester Council (CWCC) will seek to deliver between 2021-2024 in order to reduce concentrations of air pollutants and exposure to air pollution within the Chester AQMA; thereby positively impacting on the health and quality of life of residents and visitors to the CWCC's administrative area. Publication of the Action Plan was due in Spring 2020 but was delayed due to the impact of Covid 19 on resources and to enable further assessment of the potential longer-term impact of Covid on air quality within the Chester AQMA.

The life span of the AQAP is provisionally limited to 2024 as modelling has shown that without interventions, compliance should be achieved by 2023 primarily due to reductions in emissions from renewal of the national vehicle fleet. However, should the National Air Quality Objective not be achieved by this date, it will be reviewed in 2024 to determine additional measures required to achieve compliance.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

Implementation of this Plan will be subject to annual review with progress on measures set out within it reported annually within CWCC's air quality Annual Status Report (ASR) and published on our website.

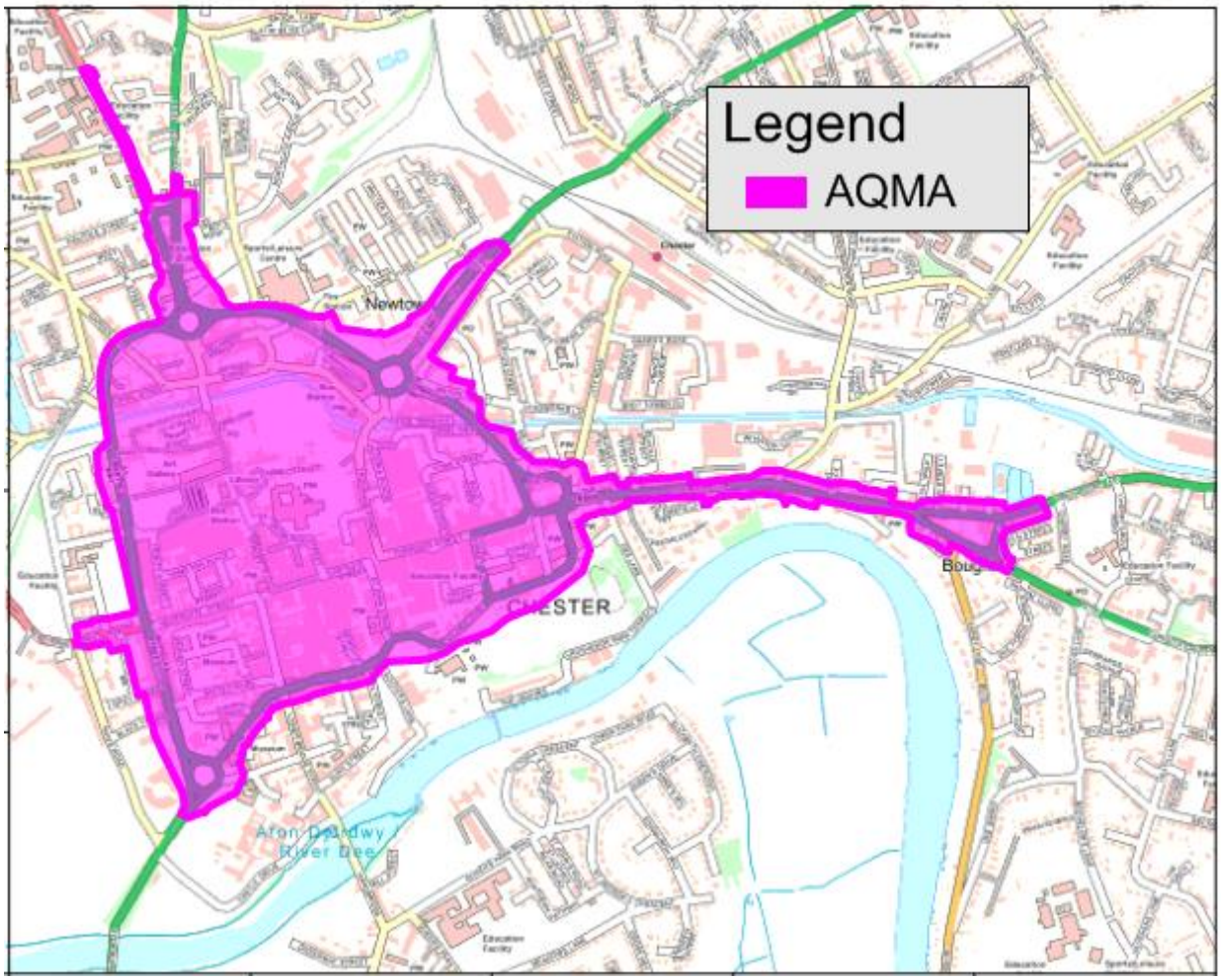
Delivery and implementation will be monitored by the Air Quality Steering Group and relevant Council committee.

2. Summary of current air quality in Chester

2.1 Chester AQMA

The Chester AQMA was declared on 23 May 2017 due to monitored and modelled exceedances of the annual mean nitrogen dioxide (NO_2) objective of 40 micrograms per cubic metre ($\mu g/m^3$). It covers an area encompassing all land within the inner ring road with spurs stretching along Liverpool Road, Hoole Way, Watergate Street and the Boughton Gyratory. The area and boundary of the Chester city centre AQMA are illustrated in Figure 2.1.

Figure 2.1 – Chester city centre AQMA



The AQMA was declared based on the results of a detailed assessment[4], which was undertaken due to monitored exceedances of the annual mean NO_2 objective at ten diffusion tube sites in the vicinity of the city centre as shown in Table 2.2. Dispersion

[4] Air quality detailed assessment for Cheshire West & Chester Council: Chester, November 2016.

modelling undertaken to inform the detailed assessment confirmed that exceedances of the annual mean NO_2 objective were confined to the areas in close proximity to the inner ring-road and main feeder roads. The key contributors to exceedances of the objective at these locations were identified within the detailed assessment as being slow moving and queuing traffic during peak hours notably along the A51 at the Boughton Gyratory and Liverpool Road approaching the Fountain roundabout.

2.2 Local air quality monitoring

Measurements of pollutant concentrations can be made by deploying real-time analytical instruments that measure continuously and record average concentrations over specified time intervals, or by using simpler sampling devices such as diffusion tubes, which absorb pollutants over a longer time period and are subsequently analysed at a laboratory to give an average concentration for the sampling period.

CWCC operate a number of continuous air quality monitoring stations, two of which are located within the AQMA at the Boughton Gyratory (BO) and the Chester Bus Interchange (CBI) the locations of which are shown in Figure 2.2 and Figure 2.3. Recent monitoring results obtained at these sites are summarised in Table 2.1 below

Table 2.1 – NO_2 monitoring results at Chester continuous monitoring station

Site ID	Site name	Site type	Air quality criteria	2017	2018	2019
Chester BO	Boughton Gyratory	Roadside	Annual mean (µg/m^3)	27	25	23
			Number of exceedances of hourly mean standard (200 µg/m^3)	0	0	0
Chester CBI	Chester Bus Interchange	Roadside	Annual mean (µg/m^3)	40	40	38
			Number of exceedances of hourly mean standard (200 µg/m^3)	0	0	0

Cheshire West and Chester Council also measures NO_2 using diffusion tubes at locations in and surrounding the Chester AQMA. A summary of the data obtained at diffusion tube sites within Chester AQMA which exceeded the annual mean nitrogen dioxide (NO_2) objective of 40 µg/m^3 is presented in Table 2.2 – NO2 diffusion tube results for selected tube sites in Chester AQMA, the locations of which are illustrated

Figure 2.4 **–** Location of diffusion tubes in Chester and Figure 2.5 **–** Location of diffusion tubes in Chester along with all other diffusion tubes in and surrounding the Chester AQMA.

Table 2.2 – NO2 diffusion tube results for selected tube sites in Chester AQMA

Site ID	**Site name**	**Site type**	**Easting**	**Northing**	**Annual mean concentration**
C11	Christleton Road (11)	Roadside	341915	366427	41.1
C36	Christleton Road (36)	Roadside	342000	366374	47.6
OB	Boughton (105)	Roadside	341633	366510	44.8
OW	St Oswalds Way	Roadside	340623	366823	43.6
PA	Parkgate Rd (19)	Roadside	340313	367014	41.2
PG	Parkgate Road (5)	Roadside	340322	366989	45.2
RM	Rock Mount	Roadside	340291	367108	45.7
ST	St Annes Place	Kerbside	340794	366778	42.4
T6	Tarvin Road (6)	Roadside	341926	366446	43.6

Following distance correction to locations of nearby relevant exposure, the results from six of these locations (C11, C36, OB, PG, RM and T6) are deemed to be representatively exceeding at locations of relevant exposure within the AQMA.

Figure 2.2 – Location of automatic monitoring BO in Chester

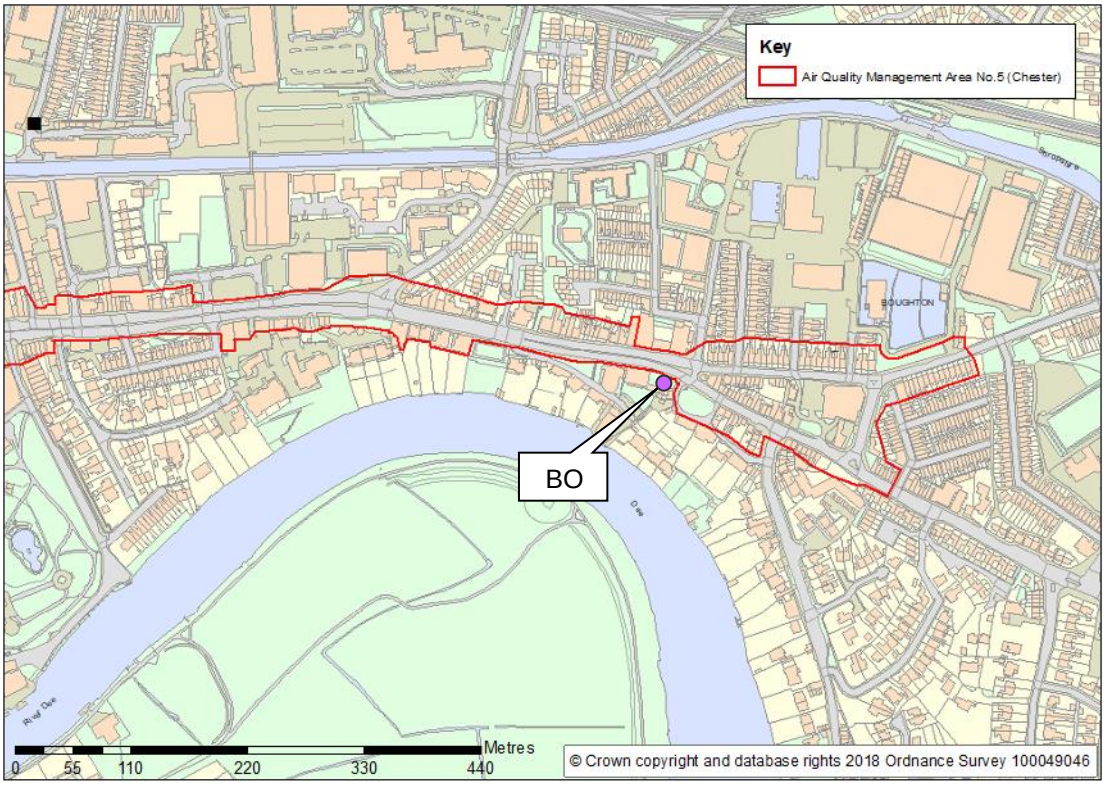


Figure 2.3 – location of automatic monitoring station CBI in Chester

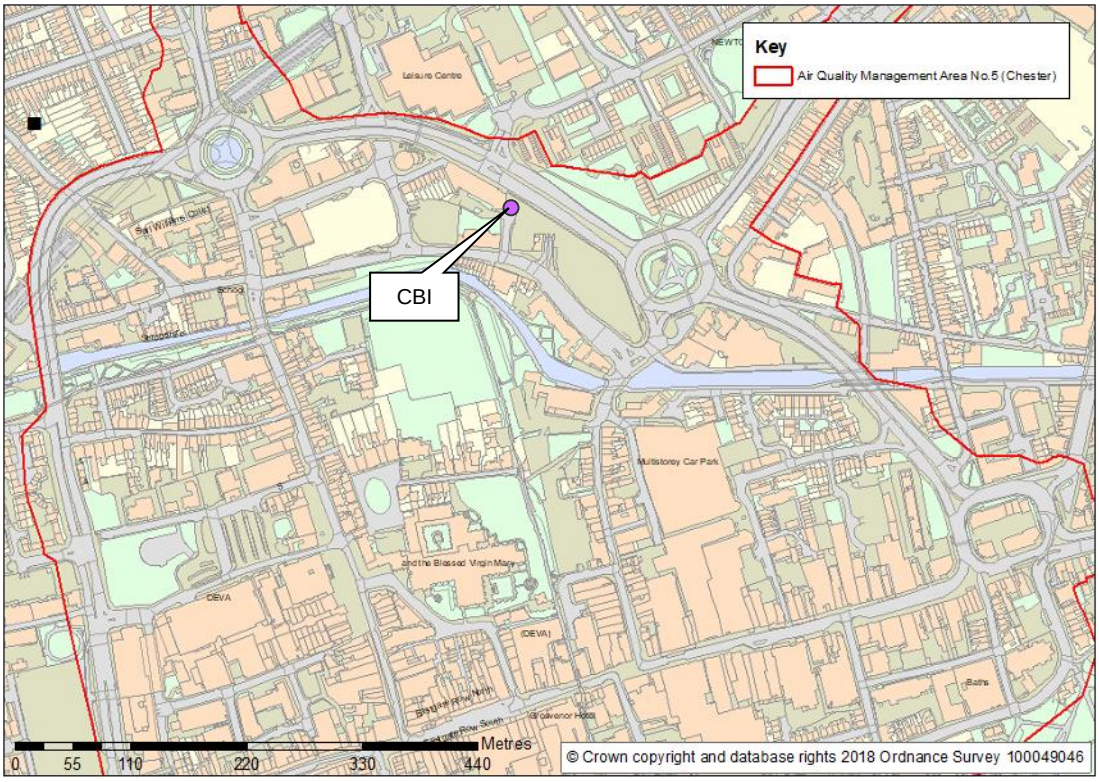


Figure 2.4 – Location of diffusion tubes in Chester

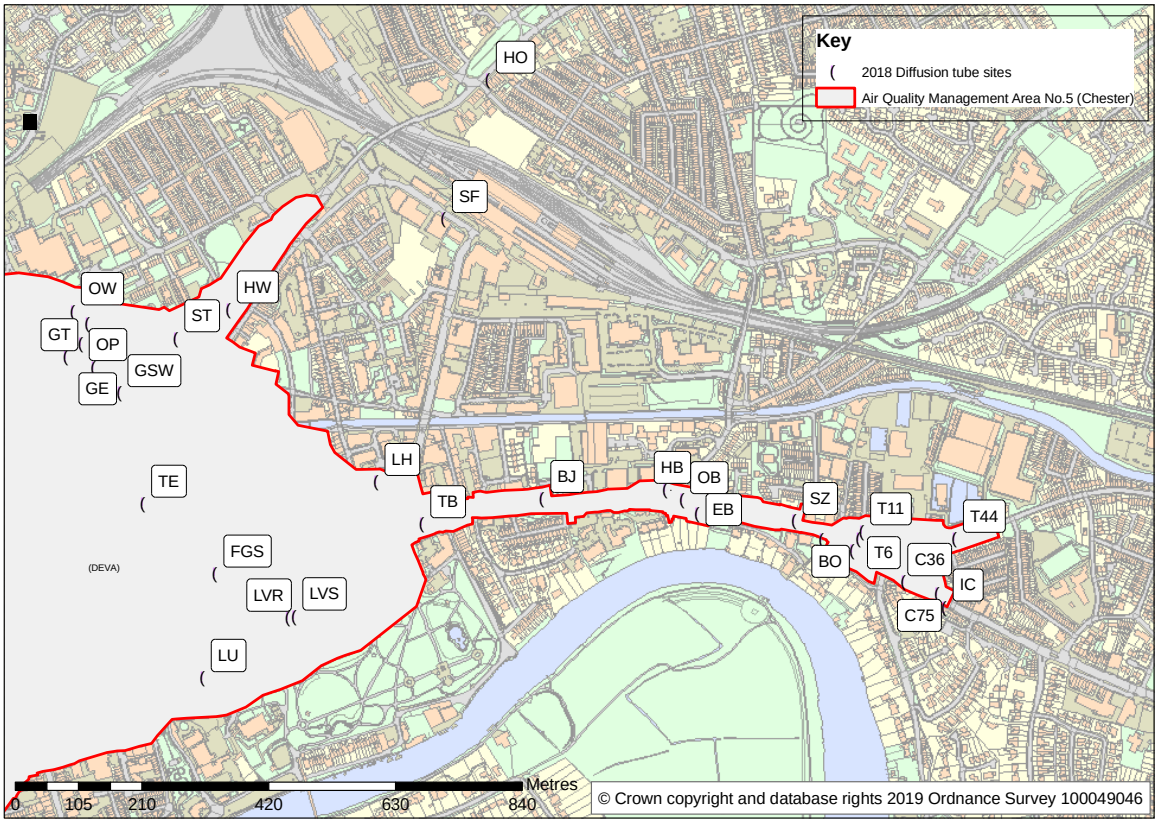
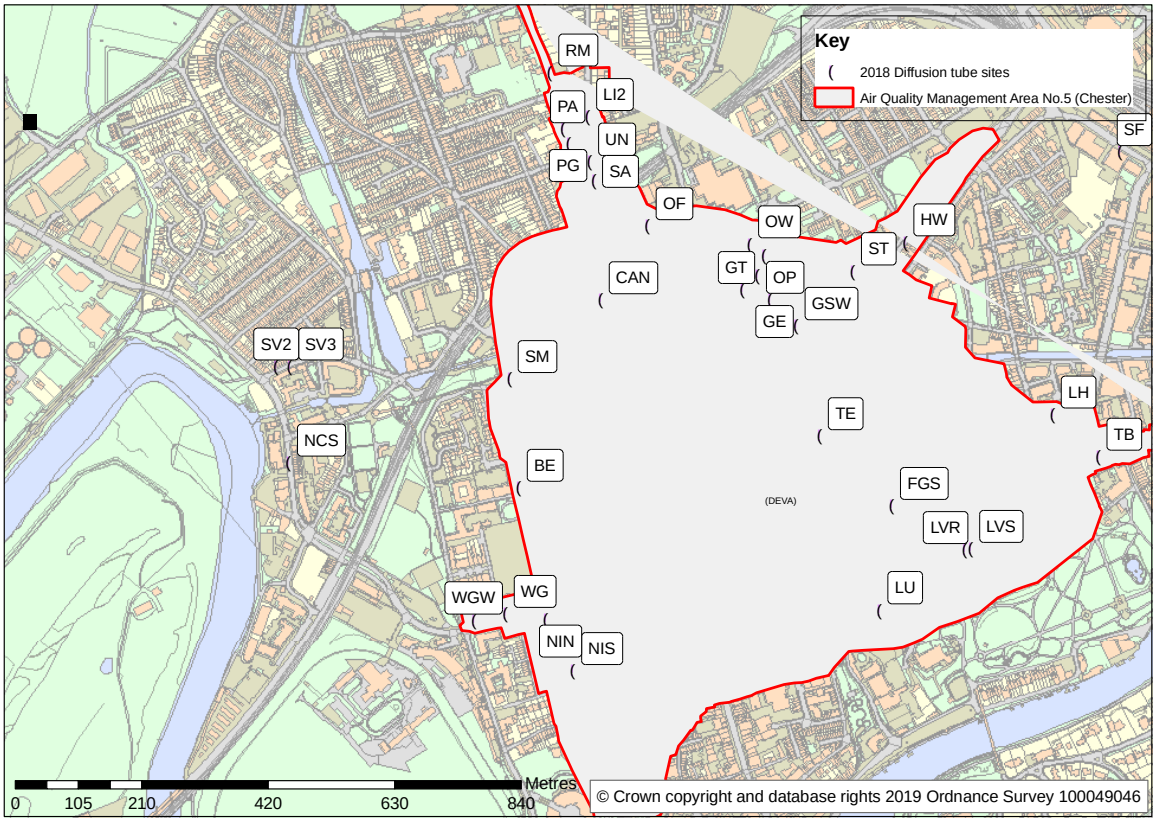


Figure 2.5 – Location of diffusion tubes in Chester

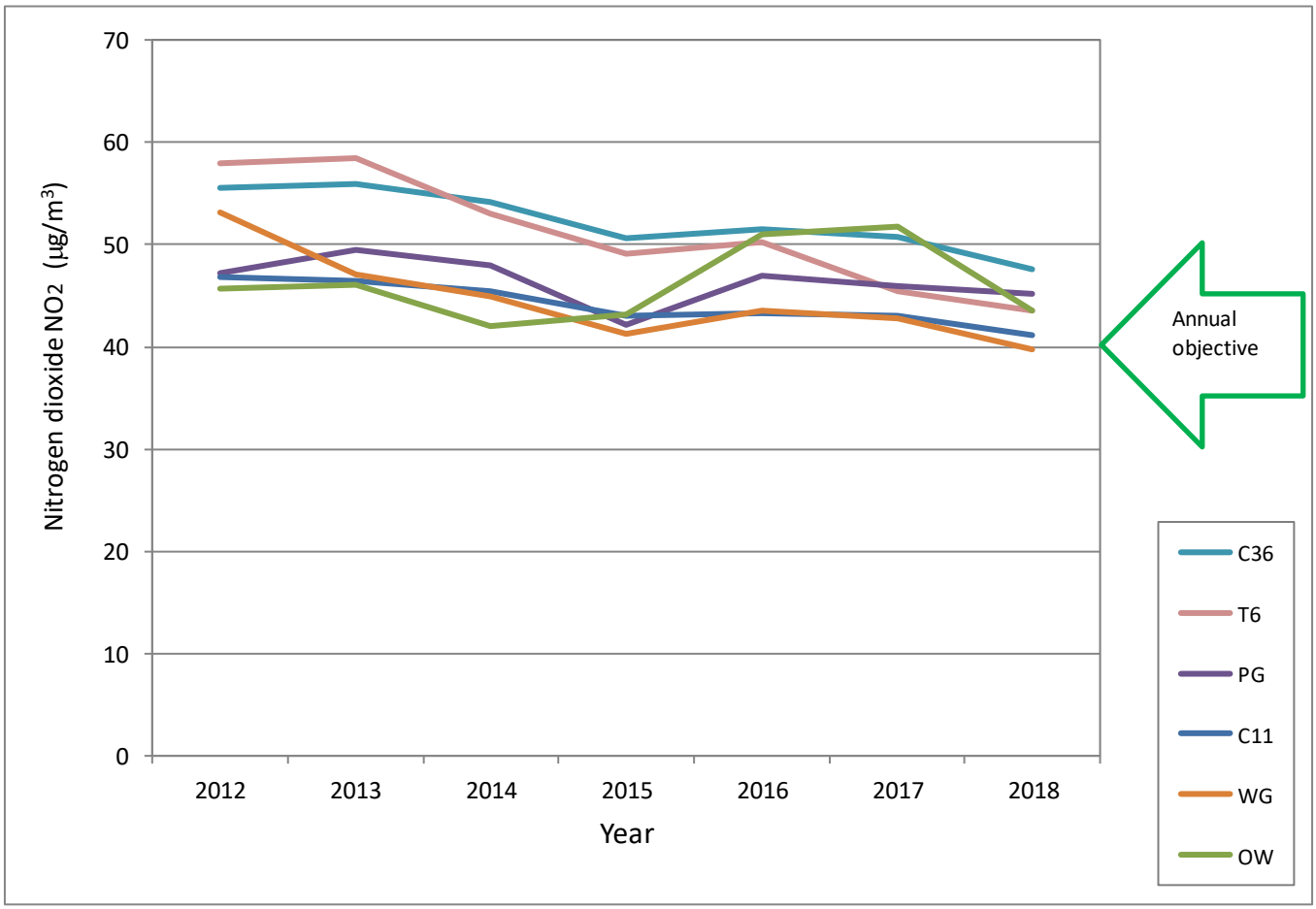


2.3 Monitored trends

Monitored annual mean NO_2 concentrations at the diffusion tube sites located within the Chester AQMA are shown in Figure 2.6 – Trends in annual mean NO2 concentrations within Chester AQMA. Monitoring data is presented between 2012 and 2018. These monitored trends in annual mean NO_2 concentrations indicate that:

- Annual mean NO_2 concentrations at each monitoring site in the Chester AQMA are generally reducing over time; and as a result
- Compliance with the annual mean NO_2 AQS objective (40µg/m^3) is likely to be achieved at all locations by 2023 without intervention.

Figure 2.6 – Trends in annual mean NO2 concentrations within Chester AQMA



3. Cheshire West and Chester Council's air quality priorities

3.1 Planning and policy context

3.1.1 Local Plan

The Cheshire West and Chester Local Plan Strategic Policies document provides the overall vision, strategic objectives, spatial strategy and strategic planning policies for the borough to 2030.

The Local Plan comprises two parts:

- Part One Strategic Policies – adopted 29 January 2015
- Part Two Land Allocations and Detailed Policies adopted – 18 July 2019

The core policies within Part One Strategic Policies which takes account of the need to mitigate any adverse impacts on air quality arising from development proposals are as follows:

STRAT 1 Sustainable development states that proposals should:

- Provide for mixed-use developments which seek to provide access to homes, employment, retail, leisure, sport and other facilities, promoting healthy and inclusive communities whilst reducing the need to travel;
- Locate new housing, with good accessibility to existing or proposed local shops, community facilities and primary schools and with good connections to public transport; and
- Support regeneration in the most deprived areas of the borough and ensure those reliant on non-car modes of transport can access jobs and services.

STRAT 10 Transport and accessibility states that:

- In order to minimise the need for travel, proposals for new development should be located so as they are accessible to local services and facilities by a range of transport modes;

- New development will be required to demonstrate that appropriate provision is made for access to public transport and other alternative means of transport to the car;
- Proposals should seek to maximise use of sustainable (low carbon) modes of transport, by incorporating high quality facilities for pedestrians, cyclists and public transport and where appropriate charging points for electric vehicles; and
- Proposals for new industrial and warehousing development should maximise opportunities to transport products by non-road modes of transport. Sites alongside the Manchester Ship Canal, Weaver Navigation and rail network may be particularly suitable for freight use and these opportunities should be integrated into development proposals where feasible. Existing or potential freight movement opportunities will be safeguarded from development which could preclude continued or future freight use.

SOC 5 Health and well-being states that proposals will be supported that:

- promote safe and accessible environments and developments with good access by walking, cycling and public transport; and
- Development that gives rise to significant adverse impacts on health and quality of life (e.g. soil, noise, water, air or light pollution, and land instability, etc) including residential amenity, will not be allowed.

The Local Plan (Part Two) Land Allocations and Detailed Policies set out further non-strategic allocations and detailed policies, which support the strategic objectives and policies set out in the Local Plan (Part One). The following polices are in relation to air quality:

CH 1 Chester settlement area

Within the defined settlement boundary of Chester as identified on the policies map, development proposals will be supported which are in line with the relevant development plan policies and are consistent with the following principles, where relevant, aimed at delivering the Local Plan (Part One) policy STRAT 3, Section:

7. supporting the Chester Cycling Strategy;

9. development must not give rise to significant adverse impacts on air quality

DM 31 - Air quality

In line with Local Plan (Part One) policy SOC 5, development must not give rise to significant adverse impacts on health and quality of life, from air pollution. In particular, development proposals within or adjacent to an Air Quality Management Area will be expected to be designed to mitigate the impact of poor air quality on future occupiers.

T5 – Parking and access

In order to ensure that appropriate provision is made for access and parking, development proposals will be supported which meet the requirements of Local Plan (Part One) policy STRAT 10, Section:

4. are designed to incorporate measures to assist access to and around the site by pedestrians, cyclists and to meet the needs of people with disabilities;
5. provide sufficient parking facilities to serve the needs of the development and have regard to the Council's latest adopted parking standards for cars and other vehicles as necessary, including cycles;
6. provide appropriate charging infrastructure for electric vehicles in new developments.

3.1.2 Wellbeing Strategy 2015-2020

The Council's Health and Wellbeing Strategy was adopted in 2015 and set out a vision:

> *"To reduce health inequalities and improve the health and wellbeing of people in the borough, enabling our residents to live more fulfilling, independent and healthy lives. We will do this by working with communities and residents to improve opportunities for all to have a healthy, safe and fulfilling life"*

The strategy includes four priorities, one of which is Living Well. The outcome of this priority is to ensure people have healthier lifestyles, which include Air Quality as one of indicators to achieve this priority.

3.1.3 Low Emission Strategy (2017 - 2020)

The Low Emission Strategy (2017 – 2020) (LES) was published in September 2018 and work has started on a number of its constituent measures. The LES covers a broad range of measures for targeting the reduction of NO_2, PM_{10} and $PM_{2.5}$ emissions and at the same time target the reduction in carbon emission. The measures are based upon the following three key principles:

- Shift: change mode from cars to public transport, cycling and walking;
- Avoid: reduce vehicle kilometres driven, emissions from stationary vehicles, chimneys and construction; and
- Improve: improve the vehicle technology to reduce emissions and specifically low emission vehicles (LEVs).

Measures outlined in the strategy include examining the feasibility of introducing clean air zones within the borough, including the option to charge for the use of certain vehicles.

Consideration is also given to the use of fixed penalty notices to prevent vehicle idling across the borough.

The Council will also investigate the adoption of a standards policy for use of non-road mobile machinery on construction sites in a bid to limit NO_x (oxides of nitrogen) emissions from plant used on such sites across the borough, as well as working with developers to ensure that new construction projects do not result in elevated emissions levels.

Plans are also in place to assess the requirements for greater uptake of low emission vehicles within the borough as well as measures to encourage the use of low emission buses by local bus operators.

3.1.4 Local Transport Strategy (2017-2030)

Cheshire West and Chester Council's published its Local Transport Plan (LTP3) in March 2011. This set out our over-arching strategy and objectives for improving local transport in the borough for the next 15 years. There have been many significant changes to both the national and local transport agenda since 2011 and, as a statutory document, the Council has a duty to keep the LTP under review to ensure that it remains relevant. As a result, the LTP was updated, to account for the changes

that have occurred since 2011 and to respond to the likely challenges and opportunities that are to come in the years ahead. This Transport Strategy sets out the following goals and supporting objectives for transport in the borough.

The top priorities:

- Provide and develop reliable and efficient transport networks that support sustainable economic growth in West Cheshire and the surrounding area.
- Reduce carbon emissions from transport and take steps to adapt our transport networks to the effects of climate change.
- Manage a well-maintained transport network.

The supporting priorities:

- Contribute to safer and secure transport in West Cheshire and to promote types of transport that are beneficial to health: Encourage healthier lifestyles by promoting more active forms of transport such as cycling and walking and work to reduce transport related air quality problems.
- Improve accessibility to jobs and key services which help support greater equality of opportunity: Ensure that new developments and local services are built in accessible locations.
- Ensure that transport helps improve quality of life and enhances the local environment in West Cheshire: Ensure that new transport schemes complement local character and enhance the built and natural environment and biodiversity and promote access to leisure activities by improving pedestrian, cycle, greenway and public rights of way networks.

There are currently three AQMAs in Cheshire West and Chester where local traffic is the primary source of the poor air quality, therefore, the delivery of the strategy will have strong direct impact on air quality.

3.1.5 Local Cycling and Walking Infrastructure Plan

Cheshire West And Chester Council's "Walk. Ride. Thrive" Local Cycling and Walking Infrastructure Plan (LCWIP) 2020-2030 was approved in July 2020. The plan provides a new strategic approach to help identify where cycling and walking improvements are required at a local level over a 10 year period. They form an

important part of the Government's strategy to increase the number of trips made on foot and cycle. In doing so the plan will help the Council and its partners to:

- Identify cycling and walking infrastructure improvements for future investment in the short, medium and long term;
- Ensure that consideration is given to walking and cycling within local planning and transport policies and strategies; and
- Make the case for future investment and funding for walking and cycling infrastructure.

3.2 Source apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within the Chester AQMA. A source apportionment exercise was carried out by Bureau Veritas in September 2016 on behalf of the Council. This was revised in April 2020[5]. This estimated that within the AQMA the source contributions were as follows:

- Local road traffic makes the single largest contribution to NO_x concentrations across the AQMA at 49.6%.
- Across all modelled receptors cars account for 23.5% of NO_x levels followed by buses at 11.5% and LGVs at 10.1%.
- At receptors where exceedances of the annual mean NO_2 air quality objective occur, road traffic accounts for 71.6% of NO_x levels or 62.3 µg/m^3 of the 86.9 µg/m^3 average NO_x concentrations
- At receptors where exceedances of the annual mean NO_2 air quality objective occur, cars are the main road source contribution, contributing 31.2% of total NO_x followed by buses with 20.7%, LGVs with13.2% and HGVs with 6.4%.
- At the receptor with the highest NO_x concentration (80.3 µg/m^3) cars remain the highest contributor at 30.1% but buses contribute a significant 28%. LGVs contribute 13.8% and HGVs 4.1%.

[5] Cheshire West & Chester Council - AQM Air Quality Modelling Report – AQMA Review 2019 (April 2020)

- The average vehicle split for the road network within the AQMA identifies that cars account for 83.8% of vehicles, LGVs 10.6%, HGVs 1.3%, Buses 3.8% and motorcycles 0.6%.

3.3 Required reduction in emissions

It should be noted that the relationship between NO_x emissions and the formation of NO_2 is not linear, a reduction in NO_x of 10% does not lead to a reduction of NO_2 of 10%. For this reason reduction in emissions to achieve compliance with the annual mean NO_2 standard are best considered in terms of the extent of NO_x reduction. A predicted reduction in local road traffic NOx emissions of up to 44.6% is required to achieve the annual mean NO_2 AQS objective at the worse-case location. See Appendix B for details of the calculation applied.

3.4 Estimated compliance year

In line with the application of Defra's roadside NO_2 projection factors[6] to the model's predicted 2017 concentrations, Table 3.1 below shows that the year of compliance without intervention is estimated to be 2023.

Table 3.1 — Estimated compliance year for annual mean NO_2 with no intervention.

Year	Projection Factor	Concentration
2017	1.000	53.7
2018	0.954	51.2
2019	0.908	48.8
2020	0.859	46.1
2021	0.808	43.4
2022	0.762	40.9
2023	0.723	38.8

3.5 Impacts of COVID-19 on air quality within the AMQA

COVID has impacted the life and behaviour of many people across the UK particularly in the areas of work, shopping and leisure. This impact has been

[6] https://laqm.defra.gov.uk/tools-monitoring-data/roadside-no2-projection-factor.html

observed within the AQMA. The closure of many shops and businesses during lockdown and corresponding reduction in vehicle movements has had a significant impact. All monitoring sites within the Chester AQMA were compliant with the annual mean objective in 2020. However, caution needs to be used before drawing conclusions from this comparison because prevailing weather conditions have such a significant influence on ambient concentrations. Taking expected year-on-year reductions into account, NO_2 reductions of between 27 and 48% were experienced at Chester's roadside automatic monitoring sites between the end of March and April 2020 as compared to the equivalent period in 2019[7]. The highest reductions were observed at CBI monitoring station, adjacent to the bus interchange. Annual average daily flow data on the Department for Transport's Road Traffic Statistics website (https://roadtraffic.dft.gov.uk/) suggest that traffic counts for Chester in 2020 were typically about 25% down on the previous year. How much of this reduction is temporary is not known at this stage and only further monitoring over the coming years will demonstrate permanent reductions in emissions arising from COVID-19. Given the uncertainty associated with this it is considered prudent to pursue the action plan measures until such a time that the obligations placed on the Council with regard to LAQM have been met.

3.6 Key priorities

Based on the source apportionment exercise, to effectively reduce annual mean NO_2 concentrations within the Chester AQMA, the following key priorities were identified:

- Reduce emissions from cars, buses, LGVs and HGVs in the study area; and / or
- Reduce congestion at the key junctions which should consequently reduce emissions.
- Reduce exposure of relevant receptors.

Long term and in line with the Low Emission Strategy, the renewal of the national fleet will see older vehicles replaced with newer vehicles meeting euro 6 standard as a minimum and a reduction in emissions as a consequence. The renewal of the national fleet will also see a higher proportion of ultra-low emission vehicles and in

[7] CWCC 2020/2021 Air Quality Annual Status report (ASR) September 2021

particular, electric vehicles with zero emissions. Presently the government target is that all cars and vans sold in the UK should be zero emission by 2030 with the exceptions of hybrids which will be allowed to be sold up to 2035. To assist the delivery of this locally it is necessary to ensure information is available to residents so that:

- They are able to make informed decisions about vehicle purchases.
- That they are aware of incentives and promotion schemes to buy electric vehicles.
- That they are aware of ways in which they can reduce emissions from their current vehicles.

Additionally there is a need to help facilitate the creation of electric vehicle charging point and associated infrastructure to support this.

The transition to ultra-low emission vehicles is just part of the solution, overall there has to be a substantial move toward more sustainable forms of public transport, cycling and walking.

The AQAP measures have been divided into five targeted categories, although there is often some overlap between some of the categories:

- **Priority 1: Transport** – Provision of additional transport infrastructure; changes to road layout or operation; formulation of traffic plans with the aim being to encourage the use of greener modes of transport, and/or reduce congestion and associated vehicle emissions
- **Priority 2 – Public health** – Encouragement of wider behavioural changes in local population with respect to their travel choices, raise awareness and educate members of the public on the impact of air pollution
- **Priority 3 – Planning and infrastructure** – Mitigate potential air quality impacts effectively by being involved in decision making early on for future developments required to support the growth of CWCC.
- **Priority 4 – Strategies and policy guidance** – Working with partners and stakeholders to direct the use of legislation and targeted enforcement to control air pollution

- **Priority 5 – Air quality monitoring (evidence for improvement)** – Ensure satisfactory air quality monitoring data is available to track outcomes of the implemented AQAP measures.

3.6.1 Priority 1: Transport

The main source of air pollution within the AQMA is associated with road transport emissions. Therefore, reducing transport emissions through the measures contained within the action plan are a key priority. The approach taken focuses on cars, buses, LGVs and HGVs in line with the source apportionment exercise. Promoting sustainable modes of transport will be of great importance to ensure the numbers of vehicles on the road do not continue to increase. Modal shift away from private vehicle use; a move to tighter emissions standards of buses; and the promotion and enhancement of cycling and walking as healthy alternatives to car journeys form important aspects of this Plan. Moreover, working with wider partners such as bus operators / freight operating company to introduce and encourage low emission vehicles also play important roles in reducing emissions within the AQMAs.

3.6.2 Priority 2: Public health

As discussed in further detail in section 2, the main purpose of this statutory function is to improve air quality so as to be protective of health and in particular sensitive groups within the community. The main source of air pollution within Cheshire West and Chester is road traffic. It is accepted that the most effective way to achieve improvement is to change the attitudes/ behaviour towards travel. The Council seeks to encourage and facilitate these changes through education and awareness as well as through schemes which incentivise change. Improving air pollution to ensure the health of the public is maintained requires a wide-reaching perspective and will therefore not be specific to the AQMA but will instead aim to have a wider impact on the whole borough.

3.6.3 Planning and infrastructure

Policies in the Local Plan outline the generic considerations that will be applied when considering all development proposals. The delivery of key infrastructure of the right type, in the right place, and, at the right time, is vitally important to supporting growth and delivery of truly sustainable development. The Council will work with developers and partner organisations to ensure the delivery of infrastructure, services and

community facilities necessary to develop and maintain sustainable communities; and will require provision of infrastructure and infrastructure improvements which are necessary to make development acceptable to be delivered in association with those developments.

3.6.4 Strategies and policy guidance

Emissions associated with road traffic are a significant contributor to the elevated NO_x background concentration, therefore, the strategies and policy on reducing emissions across Chester city centre will be effective in NO_x emission reduction.
The Low Emission Strategy (LES) was published in September 2018 and covers a variety of measures focused on modal shift, reduction of emissions from both vehicles and stationary sources and improvement areas such as electric vehicle (EV) charging infrastructure and emissions from public transport / licensed vehicles. It is anticipated that measures contained in the LES will deliver significant improvements in local air quality over time. In support of the aspirations of the LES, the Council has committed significant resources from the Priority Outcomes Fund to undertake a public awareness campaign and improve monitoring and public access to data. Additional resource has been committed leading to the installation of public charging infrastructure across the borough to accelerate and facilitate the transition to ultra-low emission vehicles, web site development and human resources.

The Taxi Licensing Policy, Climate Emergency Response Plan, Local Plan and Local Cycling and Walking Infrastructure Plan all have a major role to play to improve air quality.

3.6.5 Affordable air quality monitoring (evidence for air quality improvement)

Currently, CWCC monitors NO_2 within the AQMA using passive diffusion tubes and continuous monitoring stations. Air quality monitoring is a useful way to fully appreciate the extent of the air pollution problem in Cheshire West and Chester Council. It can also assist in quantifying the improvements that have materialised as a consequence of implementing measures to reduce emissions.

4. Development and implementation of CWCC AQAP

4.1 Consultation and stakeholder engagement

In developing this AQAP, we are dedicated to working with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995 also requires local authorities to consult the bodies listed in Table 4.1 during the preparation of this AQAP.

Table 4.1 – Consultation undertaken

Consultee
the Secretary of State
the Environment Agency
the highways authority
all neighbouring local authorities
other public authorities as appropriate, such as Public Health officials
bodies representing local business interests and other organisations as appropriate

In addition to this a public consultation has taken place with the following stakeholder engagement:

- Local community – residents, community groups, councillors and commerce through a range of media including
    - Council website
    - Social media
    - email
    - local newspaper
    - public meetings
    - local Councillors

Appendix A: Response to consultation, provides details of the consultation responses and how these have been considered and where appropriate, incorporated into this action plan.

4.2 Steering group

The Council formed a cross-service officer air quality steering group in September 2016 which includes officers from Environmental Protection, Public Health, Planning, Local Plans, Highways, Legal Services, Climate Change and Strategic Transport. The Steering Group is chaired by the Director of Place Operations and periodically reviews progress on the development and implementation of air quality action plans. The group meet at regular intervals and the Chair is responsible for reporting progress updates to the Chief Executive and Leader of the Council.

5. AQAP measures

Table 5.1 presents the CWCC AQAP measures decided following completion the consultation process. It contains:

- a list of the actions that form part of the plan.
- the responsible individual and departments/organisations who will deliver this action plan.
- expected benefit in terms of pollutant emission and/or concentration reduction.
- the timescale for implementation.
- how progress will be monitored.

Consultants will be appointed in April 2022 to quantify the likely reductions associated with each measure along with refinement of associated costs which in turn will help identify priorities.

NB: Please see future ASRs for regular annual updates on implementation of these measures.

Table 5.1 – Air Quality Action Plan

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
1 / (2)	Freight delivery and service plans, work with local distribution centres to change delivery emissions	Freight and Delivery Management	Delivery and Service plans	CWCC	Successful bid to the Levelling Up Fund. Detailed design completion.	Reducing emissions contribution from HGVs, reduced queuing traffic in peak hours	Bid submitted to Levelling Up Fund for multimodal hub including last mile delivery facility.	To be determined (tdb)	If funding approved, further design work will follow and will form part of City Place development plan.
2 / (4)	HGV/LGV recognition schemes for Council contracts	Promoting Low Emission Transport	Fleet efficiency and recognition schemes	CWCC	Amended procurement procedure	NO_2 Emission Reduction	Not commenced	tbd	To ensure Council contracts require use of FORS or similar in Chester AQMA.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
3 / (5)	Collaborating with bus operators to introduce ultra-low emission vehicles into the bus fleet (new or retrofit). Target use of ULEV into the problem areas	Promoting Low Emission Transport	Vehicle Retrofitting programmes	CWCC	Number of ultra-low emission bus fleets introduced	NO_2 Emission Reduction	Regular liaison with bus operators. Installation of charging infrastructure at some depot locations.	Ongoing	Falling bus patronage and Covid disruption has impacted on operator priorities.
4 / (8)	Update taxi / private hire Licensing policy	Promoting Low Emission Transport	Other	CWCC	Amendment of Taxi Licensing Policy	NO_2 Emission Reduction	Public consultation on amended policy to require fleet transition to ULEV by 2036 commenced September 2021	Early 2022	This measure requires successful implementation of charging infrastructure, either by commercial third parties or the Council (Measure 5 below).

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
5 / (10)	Alternative fuel (EV) infrastructure development in town centre	Promoting Low Emission Transport	Low Emission Vehicles, EV recharging, Gas fuel recharging	CWCC	Number of alternative fuel (EV) infrastructure development in the town centre	NO_2 Emission Reduction	Evolving programme.	Ongoing	Fast chargers delivered at Brook St and Bishop St Carparks, EV hub comprising rapids and fast to come online 2022 at Northgate MSC, Taxi rapids to come online early 2022.
6 / (11)	Procuring low emission vehicles for council-owned fleets	Promoting Low Emission Transport	Company Vehicle Procurement -Prioritising uptake of low emission vehicles	CWCC	Number of council-owned low emission fleets	NO_2 Emission Reduction	Procurement policy amended to require ULEV first approach.	2030	Dependent on fleet renewal dates, replacement has commenced and will run until 2030. Chargepoints installed at two depots.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
7 / (12)	Work together with developers to promote the inclusion of electric charging points for electric/hybrid vehicles at new development sites	Promoting Low Emission Transport	Producing alternative refuelling infrastructure to promote low emissions vehicles, EV recharging, gas fuel recharging	CWCC	Number of properties and premises where charging points have been secured	NO_2 Emission Reduction	Year 2019/2088 chargers installed. 2299 properties with cabling infrastructure.	Ongoing	Figures for 2020/21 will be published October 2021.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
8 / (13)	Public transport infrastructure improvements, e.g. - Enhanced bus shelters - Accurate electronic timetables - m-tickets / contactless payment options	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CWCC	% modal shift to car share/public transport	NO_2 Emission Reduction	Work not commenced	tbd	This area of work has not yet been scheduled.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
9 / (14)	Incentivise public transport usage, e.g. - Provision of information about existing services - Campaigns - Season ticket loan/discounts - Subsidised tickets	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CWCC	% modal shift to car share/public transport	NO_2 Emission Reduction	Work not commenced	tbd	This area of work has not yet been scheduled.
10 / (15)	Behaviour change campaigns to reduce single occupancy car trips	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CWCC	% modal shift to car share/public transport	NO_2 Emission Reduction	Funding has been identified and ring fenced.	tbd	Following identification of funding, a review of work area in conjunction with related measures eg Measure 12, is required.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
11 / (16)	Flexible working and home working encouraged	Promoting Travel Alternatives	Encourage / Facilitate home-working	CWCC	Number of people working from home	NO_2 Emission Reduction	Modern workforce programme scheduled for full implementation February 2022	tbd	The Council has led by example and introduced home working. The next phase is to determine how best we can promote it. Covid 19 has furthered this.
12 / (17)	Promoting Car Club / Car Sharing Schemes/ Car Pooling	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CWCC	% modal shift to car share/public transport	NO_2 Emission Reduction	Not commenced	tbd	This work area needs substantial further development.
13 / (18)	Park and Ride Schemes with Euro VI Vehicles	Alternatives to private vehicle use	Bus based Park & Ride	CWCC	% modal shift to car share/public transport	NO_2 Emission Reduction	Implemented	Complete	The focus is now on facilitating the transition to zero emission buses.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
14 / (20)	On and off-street parking charges linked to vehicle emission standards - including any residents permits.	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	CWCC	Improve traffic management	NO_2 Emission Reduction	2021 funding application to appoint consultants unsuccessful.	Ongoing	This is a substantial work area and there is a need to identify funding to advance it both in terms of development, infrastructure / implementation.
15 / (22)	Restrict long stay parking in AQMA.	Traffic Management	Other	CWCC	Improve traffic management	NO_2 Emission Reduction	Not commenced	tbd	Substantial work area requiring funding and resourcing.
16 / (25)	Improve signage at main junctions within the AQMA and major spurs.	Transport Planning and Infrastructure	Other	CWCC	Improve traffic management	NO_2 Emission Reduction	Not commenced	tbd	Focus on smart digital signage to assist driver choice.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
17 / (26)	Review active travel policy/strategy to identify opportunities to support delivery for example improved Signage and cycle route/parking	Transport Planning and Infrastructure	Cycle network	CWCC	Improve traffic management	NO_2 Emission Reduction	LCWIP published July 2020 Section 106 requirements successfully implemented through planning approval	Ongoing	Review of contribution AQAP can make needs to be undertaken as a priority. This will inform further work under this measure.
18 / (27)	Work together with developers to improve sustainable transport links serving new developments	Transport Planning and Infrastructure	Other	CWCC & Developer	Number of the developments providing sustainable transport links serving new developments	NO_2 Emission Reduction	Local Plan Part 2 adopted 18 July 2019 strengthening planning obligations.	Ongoing	Government policy improvements expected 2021 to strengthen sustainability criteria.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
19 / (29)	Provision of high quality, bespoke and accessible information on sustainable travel, e.g. on a dedicated travel website with route/mode options	Public Information	Via the Internet	CWCC	Number of hits on upgraded website per annum	NO_2 Emission Reduction	Council have produced an app called iTravelsmart	Ongoing	Explore options to improve app and utilise it fully for the purpose of raising awareness and supporting other sustainable transport measures.
20 / (30)	Local air quality monitoring within the unitary authority to ensure a high standard of data is achieved	Public information	Other	CWCC	Number of monitoring locations	-	Funding has been ring fenced to introduce portable real-time monitors (low-cost sensors)	Ongoing	Assessment and selection of appropriate monitoring devices needs to be undertaken.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
21 / (31)	Low Emissions Strategy	Policy Guidance and Development Control	Low Emissions Strategy	CWCC	The implementation of Low Emissions Strategy	NO_2 Emission Reduction	Published September 2018	Ongoing	Targeting and prioritising implementation of measures in the AQMA.
22 / (32)	Anti-idling enforcement at all on-street locations	Traffic Management	Anti-idling enforcement	CWCC	Idling reduction	NO_2 Emission Reduction	Legislation adopted, regular patrols in place.	Ongoing	Periodic review of intelligence to enable targeted patrols.
23 / (N/a)	Review access permissions and use of the Northgate Street traffic barrier.	Traffic Management	Other	CWCC	Reduction in vehicles accessing the city centre during restricted day time hours.	NO_2 Emission Reduction	Work not commenced	tbd	Presently access for taxis, hotel guests and disabled vehicles appears to be permitted although it is not clear whether this is supported by a traffic order.

Measure No / (Draft Action Plan measure number)	Measure	EU Category	EU Classification	Lead Authority	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to date	Estimated completion date	Comments
24 / (N/a)	Explore the potential for extension of 20mph zones throughout the AQMA.	Traffic Management	Reduction of speed limits	CWCC	Implementation of 20mph zones.	NO_2 Emission Reduction	Work not commenced	tbd	A detailed scheme for reducing speed limits across the borough has been rolled out very successfully, the potential for extending this to the city centre needs to be assessed.

Appendix A: Response to consultation

The consultation was open for 16 weeks, starting on 29 October 2019 and closing on 16 February 2020. Originally planned to run for 12 weeks, it was extended due to an unexpected period of Purdah after it was launched.

There were multiple ways in which stakeholders could respond to the consultation and ensure their views were heard. These methods included an online survey and two scheduled drop-in events which were also advertised on the Council website. These took place at the Chester Quaker Meeting House on 6th and 13th February 2020. Paper copies of the survey were available for those who did not have access to the online version, and people were also able to respond to the consultation by email, letter or telephone.

Communication methods to ensure that key stakeholders were made aware of the consultation and given the opportunity to have their say included press releases, emails to key stakeholder groups, Member Briefings, social media and presence of the consultation on the Council website.

The consultation received 64 survey responses and 10 participants emailed or sent a letter telling us their views. In addition, a number of people attended the two drop-in sessions to discuss the consultation.

Chester City Centre Air Quality Action Plan

The AQAP consultation document dated October 2019 lists 32 potential measures for consideration to improve air quality. Of these measures 11 were not consulted on as they duplicated measures already identified and approved through the Council's Low Emission Strategy. Of the remaining 21 measures we invited views on the 11 measures set out in Table 1 of the consultation document and reproduced as Table A.1 – Proposed measures for consultation below. The text in the box below each individual measure details how the consultation process has influenced this assessment. We also invited comment on the 10 remaining measures listed in

Appendix A of the consultation document and reproduced as Table A.2 below. These measures were subject to a screening criteria and it was proposed to exclude them from the action plan as unfeasible. Again the text in the box below each individual measure details how the consultation process has influenced this assessment.

General observations received

- The Council building an 800 space carpark as part of the new Northgate scheme will ensure a constant stream of cars which is incompatible with the aim of reducing congestion, improving air quality and tackling climate change.
- Access to the city centre is too easy and too cheap, it should be made harder for cars, even electric vehicles unless as part of a car share scheme or car club.
- The Northgate development should include a state-of-the-art cycle hub with a very large number of conveniently located, covered bike parking spaces.
- The Northgate MSCP is wholly inappropriate and unnecessary.

- All council carparks should be subject to increasingly strict electric vehicle charging provisions.
- The more car owners that switch to electric vehicles the better it will be for air quality and climate change.

- The installation of appropriate real time monitors on key routes into the city centre, would communicate to residents the impact of their travel habits on air quality and health.
- Availability of park and ride after 7pm would be great.
- Everything to date in urban planning, and the AQMA is no exception, has been centred on the conventional motorised vehicle: speed and ease of access for this mode of transport being paramount.
- Cheshire West and Chester Council need to be much more serious and ambitious if it is to match up to the commitment it says it has to improving Air Quality.
- Other cities are applying much more effective and ambitious measures, the Council needs to match that ambition.
- There are too few cycling and walking measures within the action plan.

- It appears that there is overlap and could lead to confusion between this strategy/consultation and the actions identified in the Low Emission Strategy.
- Phase out car parking spaces to a baseline level over 5 year period aimed at EVs only and increase park and ride services over the same period.
- Conduct surveys of why people do and don't use the existing park and ride service, find out what would attract more customers.
- Make all routes safer for pedestrians and cyclists.
- The Council needs to do more to raise awareness of the issue of poor air quality.
- The action plan should make clearer links to public health and active travel benefits.

Table A.1 – Proposed measures for consultation

Measure No. (As per BV Action Plan)	**Measure**	**Measure description**	**Target NO_2 pollution reduction in AQMA**	**Progress to date**
Promoting low emission transport				
7	Encourage and support the retrofitting or upgrade of private hire vehicles / taxis to LPG engines.	LPG vehicles emit lower NOx levels and the council could encourage operators to convert their diesel vehicles.	Less than 1 microgram per cubic metre ($\mu g/m^3$)	Licensing policy review commenced.
Comments The use of LPG met with many comments of support and the improvements over diesel were acknowledged although it was noted that not all vehicles may be able to convert to LPG. A number of respondents noted that it may result in a delay in the transition to ultra-low emission vehicles. Most viewed this delay as detrimental to improving air quality and a step in the wrong direction with the view we should be moving away from fossil fuels but one respondent noted that a temporary 5 year delay will enable ULEV costs to fall and infrastructure to be installed. **Response** In response to the consultation, Measure 7 has been omitted from the action plan. Recognising general comments that more must be done sooner, we acknowledge that delaying the move to ULEVs is contrary to our objective to reduce NO_2 emissions as quickly as feasibly possible.				
8	Update taxi / private hiring policy	To amend taxi policy to accelerate the uptake of ultra-low emission vehicles similar to Measure 7.	Less than 1 $\mu g/m^3$	Licensing policy review commenced.

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
Comments This proposal met with widespread support with no respondents disagreeing. A number of respondents noted that infrastructure was needed to support this, especially rapid chargers. The additional cost to operators was also noted and that it needed to be implemented sympathetically. **Response** The taxi and private hire fleet transition to ultra-low emission vehicles should commence as soon as possible taking into account the costs associated to the trade. A public consultation on proposed revisions to the Taxi Licensing Policy was approved by Licensing Committee on 15 June 2021 and a public consultation has commenced ending on 16 November 2021. The consultation seeks views on the proposal to ensure the entire private hire and taxi fleet licensed in the borough are ultra-low emission vehicles no later than 2036 requiring new replacement vehicles to be ULEVs.				
Promoting travel alternatives				
13	Public transport infrastructure improvements	Improving physical infrastructure such as bus stops, digital timetables and contactless payment to encourage and increase bus use.	Less than 1 $\mu g/m^3$	Ongoing Chester Bus Interchange complete. Improvements planned for Ellesmere Port bus station Two main operators offer contactless payment.

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
Comment This measure met with strong support with only one respondent disagreeing with this proposal. Strong support for the provision of more real-time bus timetable signage at bus stops and contactless payment methods were recorded. A number of comments identified opportunities for introducing electric bus charging infrastructure to facilitate the introduction of electric buses. A number of respondents observed that infrastructure alone was not sufficient, bus services needed to be improved with greater frequency with cross town services and a need for more services during weekends and evenings. Mixed comments were received with regard to bus stop improvements with a number of respondents advocating more bus stops and a number advocating fewer arguing buses should be kept to main roads and people should walk to them. **Response** The measure will form part of the action plan.				
14	Incentivise public transport usage, e.g. - provision of information about existing services - campaigns - season ticket loan/discounts - subsidised tickets	Removing barriers to travel is a key element of the Low Emission Strategy and the provision of quality information as per Measure 22 below is an integral part of this.	Less than 1 $\mu g/m^3$	Ongoing As per Measure 22 – Raising awareness

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
Comment This measure was met with widespread support with suggestions to subsidise fares but observations on the challenges of getting people out of their vehicles were also noted as were comments regarding the lack of buses servicing Chester. The construction of the Northgate Multi-storey carpark was highlighted as a contradictory to both the action plan and the climate emergency and the Council should address this. Travel cards, integration with train timetables, free park and ride, improving road crossing facilities by bus stops and the need to reverse rising fares and declining services were all cited as ways to incentivise use. Increased use also has the added benefit of making a positive contribution to other health outcomes such as reducing obesity through increasing activity. **Response** The measure will form part of the action plan.				
16	Flexible working and home working encouraged	The aim is to reduce vehicle movements at peak hours resulting in reduced congestion.	Less than 1 $\mu g/m^3$	To be incorporated into Measure 22 – Raising awareness
Comment This measure was met with widespread support with recommendations that planning policy make it a requirement for new commercial developments to assesses the potential. An alternative recommendation to home working for jobs that cannot support it is a staggered start time to reduce congestion at rush hour. **Response** The measure will form part of the action plan.				

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
17	Promoting car club / car sharing schemes / car pooling	This measure considers alternative car ownership models such as car clubs and the use of car share websites.	Less than 1 $\mu g/m^3$	As per Measure 22 – Raising awareness
Comments This proposal met with widespread support with only two respondents disagreeing however a number of respondents raised doubts about the effectiveness of the measure, the potential for only very limited success and whether it would represent good use of resources. **Response** There is a need to reduce single occupancy car journeys with many forecasters predicting a great uptake in car clubs. Acknowledging there are few schemes in existence within Chester presently but recognising the low resource impact the measure will form part of the action plan.				
Traffic management				
20	On and off-street parking charges linked to vehicle emission standards - including any residents permits	Consider using variable parking costs and other incentives to promote the uptake of ultra-low emission vehicles.	Less than 1 $\mu g/m^3$	Not commenced.

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
Comments This proposal met with widespread support (66%) but 18% of respondents disagreed. The main reason for disagreement was the disproportionate impact it would have on lower income families who could not afford a ULEV and potentially could be divisive. Other raised concerns that extra parking fees would threaten businesses in the town centre and traffic would just go to far less sustainable locations such as out of town retail parks with free parking. Observations that such schemes must be aligned with a roll out of charging infrastructure and improved bus services providing alternative sustainable travel options for people. Some respondents noted the absence of bus services in the evening and the dependency of the nighttime economy on cars. Resident responses noted that any requirement to link parking permits to ULEVs would need suitable infrastructure to support it. **Response –** There were valid concerns expressed despite the general support in principle. The measure will form part of the action plan noting the issues raised and the need to address these.				
22	Parking restrictions	Restricting long stay parking opportunities within the city centre could encourage greater use of Park and Ride and public transport.	Greater than 1 µg/m^3	Not yet commenced

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
Comments This proposal met with widespread support (70%) but 20% of respondents disagreed. The main reasons for disagreement were the lack of travel alternatives for employees in the city centre given that many bus services, including the park and ride, often finish before they end their shifts. Additionally it was highlighted that it was often cheaper to park in the city centre than travel in by bus which would penalise employees who work there. The impact on neighbouring residential areas was also a serious concern particularly the Garden Quarter. Concerns over “musical cars” were also raised, with people simply moving parking spaces and in the process generating additional emissions that otherwise would not have occurred. Concerns were also raised over the likely effectiveness due to the number of private operator carparks **Response -** It is noted that the measure must be supported by improvements in travel options. This measure cannot be introduced in isolation and will be challenging to deliver within the timeframes of this plan however the Council does have control over the Park and Ride service. The measure will be retained for further consideration.				
Public Information				
25	Improve signage at main road junctions within the AQMA	The use of digital signage can assist in ensuring traffic movements are minimised.	Negligible	Ongoing consideration of available technology

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
Comments This proposal met with widespread support but with a large number of respondents neither agreeing or disagreeing (22%), with 14% disagreeing. Many who supported the proposal commented that digital signage could make it easier for town centre visitors to find parking but other commented that it appeared to be too light a measure questioning any measurable contribution it would deliver. Others clarified their support that signage needed to start at the outer ring road if it were to be effective and that it should be supplemented by real-time air quality monitoring data. **Response -** The measure will form part of the action plan.				
26	Improve signage and cycle route/parking	Review signage to ensure it assists safe cycle access to the city centre.	Negligible	Ongoing
Comments This proposal met with widespread support with 82% of respondents agreeing or strongly agreeing and less than 10% disagreeing. The main comment to qualify the response was that the greater problem for cyclists is the lack of safe routes into the city centre with improved cycle storage with recommendations to broaden the scope of the measure in line with the LCWIP. **Response** – Comments citing the lack of dedicated cycling measures were noted and there needs to be clearer links to the LCWIP and cycling measures in other Council policies, strategies and plans. As such this measure will be adapted to provide greater scope to consider additional cycling measures.				

Measure No. (As per BV Action Plan)	Measure	Measure description	Target NO_2 pollution reduction in AQMA	Progress to date
28	Education and eco-driving courses to train fleet drivers to drive in a way that minimises emissions	Vehicle emissions can be reduced by good driving. The provision of courses can assist in providing the necessary education.	Negligible	Driver courses offered by Council and available by other providers.

Comments

This proposal met with widespread support (57%) but with a large number of respondents neither agree or disagree (26%), with 16% disagreeing or strongly disagreeing. The main query of both those agreeing and disagreeing was whether the measure would or could deliver any worthwhile improvements on its own resulting in a lot of wasted resources. As part of a broader campaign it may be more effective or else targeted at heavy city centre users like taxi drivers.

Response – The concerns are noted and it is considered that the measure should be omitted from the action plan based on a qualitative cost benefit analysis.

Table A.2 – Proposed measures to be excluded from AQAP.

BV Measure number	**Measure**	**Potential impact on air quality in the local area** (0 = Negligible 1 = Small 3 = Medium 5 = Large)	**Likely feasibility / acceptability** (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	**Cost** (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	**Further details**
1	Freight partnerships for city centre deliveries	5	0	-3	HGV are a significant contributor however they are generally national or multinational companies operating to complex logistical schedules. Securing co-operation and co-ordination would take a significant effort and capital investment. This is not deliverable in the lifetime of this action plan.
Comments - a small number of respondents supported the retention of this measure noting the benefits that could accrue. **Response** – The revision of the modelling work confirms that the impact from HGVs is about half that previously estimated. The potential impact has therefore reduced considerably but the cost and the resources required to implement the scheme have not. The measure will be omitted.					

BV Measure number	Measure	Potential impact on air quality in the local area (0 = Negligible 1 = Small 3 = Medium 5 = Large)	Likely feasibility / acceptability (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	Cost (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	Further details
2	Freight delivery and service plans, e.g. work with local distribution centres to change delivery routes/reduce emissions	0	0	-1	As above, working with multiple freight operators would be difficult. Also there is little scope to change routes in a way that would deliver measurable reductions in emissions.

Comments – A number of respondents noted the impact of delivery vehicles within the AQMA and the benefits of a final mile delivery scheme.

Response – As noted above the impact from LGVs is more significant that the original modelling demonstrated. Additionally a potentially enduring consequence of COVID 19 is the proliferation of home deliveries meaning that even the revised modelling work will understate the impact of LGVs. Consequently the Council has submitted a bid into the Government levelling fund to facilitate a multimodal hub to progress this. The measure is retained.

BV Measure number	**Measure**	**Potential impact on air quality in the local area** (0 = Negligible 1 = Small 3 = Medium 5 = Large)	**Likely feasibility / acceptability** (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	**Cost** (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	**Further details**
3	Strategic routing of HGVs / freight	1	0	-2	Measures that primarily rely on transferring emissions from one area to another rather than reducing emissions are not considered appropriate. Irrespective the options for rerouting are very limited due to the small size of the city centre.
Comments – only one comments was received on this noting that this already occurs insomuch as is possible. **Response –** The measure is omitted.					

BV Measure number	Measure	Potential impact on air quality in the local area (0 = Negligible 1 = Small 3 = Medium 5 = Large)	Likely feasibility / acceptability (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	Cost (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	Further details
4	To support and facilitate the introduction of a HGV/LGV fleet operator recognition scheme for good driving including efficient use of fuel.	0	3	-1	The opportunity for companies to operate a Fleet Operator Recognition Scheme (FORS) already exists and many operators in the borough already do. There is no dedicated resource available to deliver this measure and haulage companies are likely to be aware of it already.
Comments – no-one objected to the proposal to omit this measure however one respondents commented that the FORS could be integrated into the Councils own requirements covering both its own vehicles but also those contracted under development schemes. **Response –** Taking this into account and considering the ease at which promotional work of FORS could be incorporated into any awareness campaign with only the minimal resource impact, this measure will be retained with a focus on vehicles either used directly or indirectly by the Council.					

BV Measure number	**Measure**	**Potential impact on air quality in the local area** (0 = Negligible 1 = Small 3 = Medium 5 = Large)	**Likely feasibility / acceptability** (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	**Cost** (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	**Further details**
5	Collaborating with freight operators to introduce low emission vehicles into the LGV and HGV fleet	0/1	0	1	The decision by companies to introduce low emission vehicles will be based on commercial and legislative requirements. Presently there are few alternatives available for HGVs and little infrastructure to support them. LGVs are likely to increase overtime as more vehicle options and charging facilities come online.
Comments – one respondent disagreed stating delivery within the timeframe was possible. **Response -** Given the remodelling work demonstrated a greatly reduced impact by HGVs and given the absence of both alternative fuels and staff resources to deliver a scheme such as this, the measure has been reassessed, the impact is reduced to a zero and will be excluded from this action plan.					

BV Measure number	Measure	Potential impact on air quality in the local area (0 = Negligible 1 = Small 3 = Medium 5 = Large)	Likely feasibility / acceptability (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	Cost (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	Further details
9	Low Emission Zone / Clean Air Zone (CAZ)	5	0	-3	Costs associated are very high. Any scheme needs to be supported by an excellent public transport system.

Comments

There were many objections raised to the proposal to exclude this measure but there was also a recognition that it could only be implemented if it were supported by a strong local transport system which would increase the costs and challenges considerably.

Response – The objections were noted but the context is important. Exclusion from the Action Plan does not mean it is not to be considered further through Measure N of the Low Emission Strategy. Whilst the implementation would resolve the NO_2 issue, the timeframes simply do not accord with the aim of achieving compliance by 2024. The implementation on its own would resolve the issue but without addressing poor local transport alternatives and the risk of displacing city centre traffic movements to out of town retail parks or other city centres, both of which require a broader strategic framework, would result in many unintended consequences. Whilst it is acknowledged that a small number of other cities in the UK are implementing CAZs it should be noted that the specific circumstances of each is relevant. Recognising that a massive reduction in car dependency is required, the consultation has only strengthened the cost argument for excluding it whilst lending weight to other strategies that would seek to introduce it in more appropriate timeframes.

BV Measure number	**Measure**	**Potential impact on air quality in the local area** (0 = Negligible 1 = Small 3 = Medium 5 = Large)	**Likely feasibility / acceptability** (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	**Cost** (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	**Further details**
19	Encouraging residents and visitors to use car share.	1	1	1	This is effectively a duplicate of 17 included in the consultation.
Comments – respondents supported the proposal to exclude as duplication. **Response** – the measure is excluded from the action plan.					
21	Waiting and loading restrictions / Keep clear zones	0	1	1	Major thoroughfares already have such restrictions so the main objective would be to deter traffic from certain areas and direct it to short term car parks.
Comments – only one respondent disagreed with the proposal to exclude it. **Response –** additional restrictions would require considerable public consultation and have little or no impact on areas of congestion. Anti-idling enforcement measures already exist and consequently it is not considered beneficial to include this measure.					

BV Measure number	Measure	Potential impact on air quality in the local area (0 = Negligible 1 = Small 3 = Medium 5 = Large)	Likely feasibility / acceptability (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	Cost (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	Further details
23	Traffic signal control for smoother traffic movement at the main junctions within AQMA, e.g. install smart traffic lights	0	3	-3	An Urban Traffic Management Control system is already operated within the City Centre and around the ring road. It is unlikely that this option can provide any significant improvement.
Comments – respondents who commented on this generally made the case for the relaxation of traffic controls advocating the switching off of traffic lights at roundabouts at night. **Response –** The measure is excluded.					
24	Implementation of bus lanes/low emission vehicle lane	1	0	-3	There are a small number of bus lanes in operation however the scope to expand these without creating considerable displacement of existing traffic or further congestion is extremely limited.

BV Measure number	Measure	Potential impact on air quality in the local area (0 = Negligible 1 = Small 3 = Medium 5 = Large)	Likely feasibility / acceptability (0 = not feasible 1 = unlikely / low 2 = likely / medium 3 = very likely / high	Cost (- 3 = very high (£250k+) -2 = high (£100k - £250k) -1 = medium (£20k - £100k) 0 = low (£0 - £20k)	Further details
Comments – A number of comments were received expressing support for low emission vehicle lanes as a means of providing bus improvements and safer access to the town centre for cyclists. **Response –** The pandemic provided a unique opportunity to obtain funding to trial Active Travel and Sustainable Transport Lanes on key corridors into the city centre in the Summer of 2020. That trial was extremely useful and reinforces the point that implementation must take account of broader strategic and structural issues to be successful. The Council is exploring this with the community through the Active Travel Forum.					

Additional Measures recommended by respondents for inclusion within the AQAP

1. There needs to be more emphasis on promoting cycling and measures that have a direct impact on this.
   Response – we agree and Measure 26 of the consultation proposal has been amended accordingly, see Measure 17 of this Table 5.1 **– Air Quality Action Plan**.
2. EV and bikes should be made available for short term hire.
   Response – we are dependent on third party service providers but would definitely seek to support appropriate schemes.
3. Reduce pedestrian crossing green time to reduce queueing.
   Response – this would run contrary to other sustainable transport and active travel measures being advanced and would be detrimental to our long term aims. Pedestrian safety is paramount.

4. Plant more trees – green infrastructure, it absorbs CO2 and improves air quality if the right species are planted correctly.
   Response – We would agree completely with the principle of this and have explored funding opportunities for Chester. It forms part of measure M within the Low Emission Zone and DM31 of the Local Plan and is picked up by Measure 31 of the consultation proposal – see Measure 21 Table 5.1 **– Air Quality Action Plan**.
5. We need more car free areas in Chester, ban all cars on St Werburgh St and Eastgate Street during daytime, it is meant to be a pedestrian zone.
   Response – We would agree that daytime access to areas of the city centre which are pedestrianised is detrimental to health and the aims of this action plan. As such we would introduce a measure to review access rights and the operational protocols of the Northgate Street barrier – see Measure 23 Table 5.1 **– Air Quality Action Plan**.
6. An integrated green transport system is required.
   Response – We would completely agree, but that is beyond the constraints of this action plan and cannot be considered further within it.
7. Additional real-time air quality monitoring is required to support the work being undertaken, assess improvement and facilitate reporting and raising awareness.
   Response – We agree that additional real-time monitoring could be beneficial although there are concerns surrounding the accuracy of portable low cost equipment and this has deterred us to date from deploying it. However, in the last 2 years since the draft action plan was produced there has been significant improvement in both reliability and accuracy. We believe Measure 30 of the consultation proposal covers this area sufficiently, see measure 20 of this Table 5.1 **– Air Quality Action Plan**.
8. Target idling buses, coaches and idling taxis at the train station.
   Response - We already do this and also liaise frequently with bus operators and taxis on this matter.
9. More creative incentivisation measures are needed such as offering event discounts, for example CarFest, if you travel there on public transport.
   Response - This is a really good and helpful proposal and whilst it is beyond the scope of the action plan, it is a principle that should be considered elsewhere for both air quality and climate change potential and particularly in terms of growing public transport.

10. Include measures that address out of town retail parks traffic or the traffic is just displaced to locations far less sustainable.

    Response – We would completely agree that the problem and solution presented by a car dependent culture are far more complex and structural than this action plan is able to address and hence the omission of measures such as CAZs and restricting long stay parking opportunities.

11. Improve iTravelSmart app to ensure it routes cyclists via the safest route and takes account of exposure to poor air quality. It should also be on the Council website.

    Response - we agree that there is scope for improvement subject to resource availability and this is best addressed under Measure 29 of the consultation proposal, see measure 19 of this Table 5.1 **– Air Quality Action Plan**.

12. The introduction of 20mph speed limit throughout the AQMA including the inner ring road.

    Response – Speed limit reductions can be beneficial and Measure D of the LES specifically seeks to assess opportunities. In terms of improving safety for cyclists and pedestrians and making it more attractive for people to access the city centre by more sustainable means of transport it provides the potential for indirect pollutant emission reductions as well as those directly associated with the measure. On reflection, consideration of this option should progress as a measure of the action plan, see measure 24 of this Table 5.1 **– Air Quality Action Plan**.

13. Introduce a smoke control area within the city centre.

    Response – Whilst the authority is tentatively exploring the process for introducing new SCAs within the borough, in this context the number of such fireplaces and appliances are believed to be relatively few in number and it is likely that in many case NOx emissions would only reduce significantly if there was a large scale move to green heat sources such as ground source heat pumps. Presently a switch to a smokeless fuel or gas appliance would still result in NOx emissions.

14. Introduce a workplace parking levy.

    Response – Only Nottingham have introduced this measure to date but it is known that other cities are considering it. We would agree that in principle it could be a very important tool to reduce the number of vehicles entering the city centre and should form part of the strategic considerations currently progressing through other processes rather than this action plan.

15. Realtime digital signage on the outer ring road and spurs to direct city centre bound traffic.

    Response – We would agree that there is definite merit in this recommendation. It is clear that real-time signage must be introduced at a point at which a driver still has options to be able to consider alternative routes or means of travel. This ideally is before the driver gets in a vehicle and then once committed, whilst there are alternative routes to take that would reduce journey time, congestion and consequently emissions. It complements both the awareness raising measure and increased real time monitoring proposal. Linking into the urban traffic management system may be difficult and will need exploring but we will pick this up through Measure 16 of this Table 5.1 **– Air Quality Action Plan** for further consideration.

Appendix B: NO_x concentration reduction required at receptor R45[8].

Table B.1 - NO_x concentration reduction required at receptor R45, receptor with maximum NO_x concentration.

Metric	**Value (Concentrations as µg/m^3)**
Worst-case relevant exposure NO_2 concentration	54.8
Equivalent NO_x concentration	109.4
Background NO_x	26.2
Background NO_2	18.0
Road NO_x – Current (2017 modelled)	83.3
Road NO_x – required to achieve NO_2 concentration of 39.9 µg/m^3	46.14
Required road NO_x reduction	37.1
Required % reduction	44.6%

[8] Cheshire West & Chester Council - AQM Air Quality Modelling Report – AQMA Review 2019 (April 2020)

Glossary of terms

AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
CAZ	Clean Air Zone
CWCC	Cheshire West and Chester Council
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
EV	Electric Vehicle
FORS	Fleet Operator Recognition Scheme
LGV	Light Goods Vehicle
HGV	Heavy Goods Vehicle
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less